



IFW16

## RAW SEQUENCE LISTING

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:28

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw

4 <110> APPLICANT: Lo, Wei-Yu  
 5 Lo, Ming Ching  
 6 Liao, Pei-Ru  
 8 <120> TITLE OF INVENTION: LAC SHUTTLE VECTORS  
 11 <130> FILE REFERENCE: 12875-002001  
 13 <140> CURRENT APPLICATION NUMBER: 09/778,516B  
 14 <141> CURRENT FILING DATE: 2001-02-07  
 16 <150> PRIOR APPLICATION NUMBER: TW 89110235  
 17 <151> PRIOR FILING DATE: 2000-05-26  
 19 <160> NUMBER OF SEQ ID NOS: 8  
 21 <170> SOFTWARE: FastSEQ for Windows Version 4.0  
 23 <210> SEQ ID NO: 1  
 24 <211> LENGTH: 8115  
 25 <212> TYPE: DNA  
 26 <213> ORGANISM: Lactobacillus plantarum  
 28 <400> SEQUENCE: 1

|    |            |            |            |             |             |            |      |
|----|------------|------------|------------|-------------|-------------|------------|------|
| 29 | gatgtacggg | ccagatatac | gcgttgacat | tgattattga  | ctagttatta  | atagtaatca | 60   |
| 30 | attacggggg | cattagttca | tagcccatat | atggagttcc  | gcgttacata  | acttacggta | 120  |
| 31 | aatggcccg  | ctggctgacc | gcccacacac | ccccgcccac  | tgacgtcaat  | aatgacgtat | 180  |
| 32 | gttcccatag | taacgccaat | agggactttc | cattgacgtc  | aatgggtgga  | ctattttacg | 240  |
| 33 | taaaactgcc | acttggcagt | acatcaagt  | tatcatatgc  | caagtacgcc  | ccctattgac | 300  |
| 34 | gtcaatgacg | gtaaaatggc | cgccctggcg | tatgcccagt  | acatgacctt  | atgggacttt | 360  |
| 35 | cctacttggc | agtacatcta | cgtattagtc | atcgctatta  | ccatgggtgat | gcggttttgg | 420  |
| 36 | cagtacatca | atgggcgtgg | atagcgggtt | gactcacggg  | gatttccaag  | tctccacccc | 480  |
| 37 | attgacgtca | atgggagttt | gttttggcac | caaaatcaac  | gggactttcc  | aaaatgtcgt | 540  |
| 38 | aacaactccg | ccccattgac | gcaaatgggc | ggttaggcgtg | tacgggtgga  | ggtctatata | 600  |
| 39 | agcagagctc | tctggctaac | tagagaaccc | actgcttact  | ggcttatcga  | aattaatacg | 660  |
| 40 | actcactata | gggagaccca | agcttggtac | cgagctcgga  | tccactagta  | acggccgcca | 720  |
| 41 | gtgtgctgga | attctgcaga | tatccatcac | actggcggcc  | gctcgagcat  | gcacttagag | 780  |
| 42 | ggccctattc | tatagtgtca | cctaaatgct | agagctcgct  | gatcagcctc  | gactgtgcct | 840  |
| 43 | tctagttgcc | agccatctgt | tgtttgcccc | tcccccgctg  | cttccttgac  | cctggaaggt | 900  |
| 44 | gccactccca | ctgtcccttc | ctaataaaat | gaggaaattg  | categcattg  | tctgagtagg | 960  |
| 45 | tgtcattcta | ttctgggggg | tgggggtggg | caggacagca  | agggggagga  | ttgggaagac | 1020 |
| 46 | aatagcaggc | atgctggggg | tgcgggtggg | tctatggctt  | ctgaggcgga  | aagaaccagc | 1080 |
| 47 | tgcattaatg | aatcggccaa | cgcgcgggga | gaggcggttt  | gcgtattggg  | cgctcttccg | 1140 |
| 48 | cttcctcgct | cactgactcg | ctgcgctcgg | tcgttcggct  | gcggcgagcg  | gtatcagctc | 1200 |
| 49 | actcaaaagg | ggtaaatcgg | ttatccacag | aatcagggga  | taacgcagga  | aagaacatgt | 1260 |
| 50 | gagcaaaagg | ccagcaaaag | gccaggaacc | gtaaaaaggc  | cgcgttgctg  | gcgtttttcc | 1320 |
| 51 | ataggctccg | ccccctgac  | gagcatcaca | aaaatcgacg  | ctcaagtcag  | aggtggcgaa | 1380 |
| 52 | acccgacagg | actataaaga | taccaggcgt | ttccccctgg  | aagctccctc  | gtgcgctctc | 1440 |
| 53 | ctgttccgac | cctgcccgtt | accggatacc | tgtccgcctt  | tctcccttcg  | ggaagcgtgg | 1500 |
| 54 | cgctttctca | atgctcacgc | tgtaggtatc | tcagttcggt  | gtaggtcggt  | cgctccaagc | 1560 |
| 55 | tgggctgtgt | gcacgaaccc | cccgttcagc | ccgaccgctg  | cgccttatcc  | ggtaactatc | 1620 |

## RAW SEQUENCE LISTING

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:28

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw

|     |             |            |             |            |            |             |      |
|-----|-------------|------------|-------------|------------|------------|-------------|------|
| 56  | gtcttgagtc  | caaccggtta | agacacgact  | tatcgccact | ggcagcagcc | actggtaaca  | 1680 |
| 57  | ggattagcag  | agcgaggtat | gtaggcggtg  | ctacagagtt | cttgaagtgg | tggcctaact  | 1740 |
| 58  | acggctacac  | tagaaggaca | gtatttggtta | tctgcgctct | gctgaagcca | gttaccttcg  | 1800 |
| 59  | gaaaaagagt  | tggtagctct | tgatccggca  | aacaaaccac | cgctggtagc | ggtaggtttt  | 1860 |
| 60  | ttgtttgcaa  | gcagcagatt | acgcgcagaa  | aaaaaggatc | tcaagaagat | cctttgatct  | 1920 |
| 61  | tttctacggg  | gtctgacgct | cagtggaaacg | aaaactcacg | ttaagggatt | ttggtcatga  | 1980 |
| 62  | gcggatacat  | atgtgaatgt | atttagaaaa  | ataaacaaat | aggggttccg | cgcacatttc  | 2040 |
| 63  | cccgaaaagt  | gccacctgac | gtcgacggat  | cgggagatca | tatcctgaca | ttctctttac  | 2100 |
| 64  | caaataaaat  | aattttgttt | attaaaaatcc | cattttgcga | caacttcttc | cgcagcttcc  | 2160 |
| 65  | atgtgctctt  | tgggtgaatc | ttcatcgcca  | acatgaacta | aatcaccatt | ctcaacatct  | 2220 |
| 66  | tcaagtttca  | aatcttgctt | aatttgcttt  | aataatccac | catagctgat | ttgtcgtggt  | 2280 |
| 67  | ccagctaagg  | catactccaa | atttttaatc  | accaccaa   | tacgctcatc | atcagccgtc  | 2340 |
| 68  | atataatcag  | ctgattttac | ctcgtatttc  | gccgtttctt | cggcactagc | ttgcaaagag  | 2400 |
| 69  | tcagttcctt  | tacggttggt | agctttaaca  | gcctgcacat | gcaccacagg | ctcataatca  | 2460 |
| 70  | actttcaagg  | ctttttgcca | taattttgcc  | cattctgctt | gtgctaaata | attatttgaa  | 2520 |
| 71  | ttcttaaaat  | aacttgattt | tacaaacagc  | aacacatgca | agtgttgatt | atatgacccg  | 2580 |
| 72  | tcttggtcat  | taacggtaat | ttcgttgtaa  | cgtaaataac | ccaataaatt | tttagtcaact | 2640 |
| 73  | tttttatagc  | gagttagctt | attaaaggct  | ttagtcaaag | ctcttaaaga | cacttttaac  | 2700 |
| 74  | tcctctgctg  | aatgagcggt | tttaacgggt  | aaagttaaaa | acaaaaaccg | tcctttaggc  | 2760 |
| 75  | tctcttgcaa  | ctgcttccgc | aataatttgt  | tttaactggc | tcgagttttt | catgctcctt  | 2820 |
| 76  | ctccaattac  | acaatggaca | caatcgttta  | tgacaaaacc | acgtttgata | aagttttaag  | 2880 |
| 77  | tgctcgccaa  | tcttacgaaa | acgcaaaact  | tcaccacaac | cccgtacatc | atgtgcccgt  | 2940 |
| 78  | ttaaattcta  | agattgccaa | atattcgcca  | tagcgcacat | tttcaatctt | cggttctcgc  | 3000 |
| 79  | caaggtctaa  | ctttgccatt | ttcagtttta  | tcttcaaaaa | tttctgacat | aaaaagctcc  | 3060 |
| 80  | tccagtttat  | ccacgtgaag | gagctgacta  | tctttttcaa | taagcttata | accttgacat  | 3120 |
| 81  | catagggtct  | ttcccctaga | ataggctata  | aatcgcaaat | gataatcaac | tcacgtgttc  | 3180 |
| 82  | cgagcgccca  | aactaggaat | ttgcacgtgg  | gtttttattt | tgtctttctt | tcaaccaatt  | 3240 |
| 83  | tataacccta  | ataatacacc | aaaagcctat  | aaaatcaatg | gatacaagcc | caattaagcc  | 3300 |
| 84  | taatcaagct  | tgattttaaa | aaactagttg  | ttgctaatag | tatcaagata | agaagaaaac  | 3360 |
| 85  | gccaaaaaatt | gcgtttttta | accccaaaaa  | gcagatcagc | aaaaaacgct | gaactgcttt  | 3420 |
| 86  | ttttaaaaccg | tggctttcag | ccacactgac  | cagctgaacc | agctggaccg | taacgcttgc  | 3480 |
| 87  | cgccgctggg  | ctcgggaaaa | caagggcttg  | ttttccaaga | cgtcaggctt | ttggtattgt  | 3540 |
| 88  | ctagtctatc  | aactccttaa | agcctccaag  | aggggcta   | atcgctgta  | aggctcaata  | 3600 |
| 89  | agccctctta  | agtcgattta | cggttgacag  | acagttagat | agctaactgt | tagctaaaat  | 3660 |
| 90  | cgcttagaac  | gcaaataaga | gcctttaaaa  | ttaacgttca | aaaataaaaa | agttcgaagg  | 3720 |
| 91  | agctagcgac  | tgaacttatt | tatttttgaa  | tgttccaaac | tgacgcaagt | cagttacgtt  | 3780 |
| 92  | tgagcaacgc  | gaaatctgat | gcaggttttg  | atgggtttag | cacaacacaa | cttcatgttg  | 3840 |
| 93  | tgtgtaagt   | cgactacat  | gataatgcgc  | actacatgat | aatgcgcact | acatgataat  | 3900 |
| 94  | gtgcgcacta  | catgataatg | cgactacat   | gataatgtac | atgataatgt | gcgcactaca  | 3960 |
| 95  | tgataatgcg  | cactacatga | taatgcgcac  | tacatgataa | tgcgactac  | atgataatgc  | 4020 |
| 96  | gcactacatg  | ataatgcgca | ctacatgata  | atgcgcacta | catgataatg | tgcaacttaca | 4080 |
| 97  | ctccaaataa  | attggagtaa | tgctaaaacc  | tgtatcagaa | gtcagcaagc | tgacaacaaa  | 4140 |
| 98  | aaagggatat  | gccaacggat | ttaccgttga  | tctcccgatc | ccctatggtc | gactctcagt  | 4200 |
| 99  | acaatctgct  | ctgattcgcg | atagtaagc   | cagtatctgc | tccttgcttg | tgtgttgagg  | 4260 |
| 100 | gtcgctgagt  | agtgcgcgag | caaaatttaa  | gtacaacaa  | ggcaaggctt | gaccgacaat  | 4320 |
| 101 | tgcataga    | atctgcttag | ggtaggcgt   | tttgcgctgc | ttcgtagaa  | gcaactaag   | 4380 |
| 102 | agtggttgga  | gtagtgcagt | atcttaaaat  | ttgtataat  | aggaattgaa | gttaaattag  | 4440 |
| 103 | atgctaaaaa  | tttgtaatta | agaaggagt   | attacatgat | tggcagccag | tctccgggca  | 4500 |
| 104 | attaatgaac  | ttggacatgg | ttgacgaccc  | ggcttttgca | agccgaattc | gaccacactg  | 4560 |

## RAW SEQUENCE LISTING

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:28

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw

|     |             |             |             |             |             |             |      |
|-----|-------------|-------------|-------------|-------------|-------------|-------------|------|
| 105 | gcgccgctta  | ctaggggtatc | gatccgataa  | aaagttaggg  | gacggccttg  | ccctgggtgcc | 4620 |
| 106 | agcagacggg  | aaggtctacg  | cgccatttgc  | cgggtactgtc | cgccagctgg  | ccaagacccg  | 4680 |
| 107 | gcactcgatc  | gtcctggaaa  | atgaacatgg  | gggtcttggtc | ttgattcacc  | ttggcctggg  | 4740 |
| 108 | cacgggtcaa  | ttaaacggga  | ctggctttgt  | cagctatgtt  | gaagagggca  | gccaggtaga  | 4800 |
| 109 | agccggccag  | cagatcctgg  | aattctggga  | cccggcgatc  | aagcaggcca  | agctggacga  | 4860 |
| 110 | cacggtaatc  | gtgaccgtca  | tcaacagcga  | aactttcaca  | aatagccaga  | tgctcttgcc  | 4920 |
| 111 | gatcggccac  | agcgtccaag  | ccctggatga  | tgtattcaag  | ttagaaggga  | agaattagaa  | 4980 |
| 112 | aatgagcaat  | aagttagtaa  | aagaaaaaag  | agttgaccag  | gcagacctgg  | cctggctgac  | 5040 |
| 113 | tgaccgggaa  | gtttacgaag  | tcaatacaat  | tccccgcac   | tccgacctatg | agtcttcca   | 5100 |
| 114 | aagccaggaa  | gaactggagg  | agggcaagtc  | cagtttagtg  | cagtccctgg  | acggggactg  | 5160 |
| 115 | gctgattgac  | tacgtgaaa   | acggccaggg  | accagtcaac  | ttctatgcag  | aagactttga  | 5220 |
| 116 | cgatagcaat  | tttaagtcag  | tcaaagtacc  | cggcaacctg  | gaactgcaag  | gctttggcca  | 5280 |
| 117 | gccccagtat  | gtcaacgtcc  | aatatccatg  | ggacggcagt  | gaggagattt  | tcccggccca  | 5340 |
| 118 | aattccaagc  | aaaaatccgc  | tcgcttctta  | tgtcagatac  | tttgacctgg  | atgaagcttt  | 5400 |
| 119 | ctgggacaag  | gaagtcagct  | tgaagtttga  | cggggcggca  | acagccatct  | atgtctggct  | 5460 |
| 120 | gaacggccac  | ttcgtcggct  | acggggaaga  | ctcctttacc  | ccaagcgagt  | ttatggttac  | 5520 |
| 121 | caagttcctc  | aagaaagaaa  | ataaccgcct  | ggcagtggtt  | ctctacaagt  | attcttccgc  | 5580 |
| 122 | ctcctggctg  | gaagaccagg  | acttctggcg  | catgtctggt  | ttgttcagat  | cagtgactct  | 5640 |
| 123 | tcaggccaag  | ccgcgtctgc  | acttggagga  | ccttaagctt  | acggccagct  | tgaccgataa  | 5700 |
| 124 | ctaccaaaaa  | ggaaagctgg  | aagtcgaagc  | caatattgcc  | taccgcttgc  | caaatgccag  | 5760 |
| 125 | ctttaagctg  | gaagtgcggg  | atagtgaagg  | tgacttggtt  | gctgaaaagc  | tgggcccaat  | 5820 |
| 126 | cagaagcgag  | cagctggaat  | tcactctggc  | tgatttgcca  | gtagctgcct  | ggagcgcgga  | 5880 |
| 127 | aaagcctaac  | ctttaccagg  | tccgcctgta  | tttataccag  | gcaggcagcc  | tcttagaggt  | 5940 |
| 128 | tagccggcag  | gaagtgggtt  | tccgcaactt  | tgaactaaaa  | gacgggatta  | tgtaccttaa  | 6000 |
| 129 | cggccagcgg  | atcgtcttca  | agggggccaa  | ccggcacgaa  | tttgacagta  | agttgggtcg  | 6060 |
| 130 | ggctatcacg  | gaagaggata  | tgatctggga  | catcaagacc  | atgaagcgaa  | gcaacatcaa  | 6120 |
| 131 | tgtgtccgc   | tgtctctact  | acccgaacca  | gtccctcttt  | taccggctct  | gtgacaagta  | 6180 |
| 132 | cggcctttac  | gtcattgatg  | aagctaacct  | ggaaagccac  | ggcacctggg  | aaaaagtggg  | 6240 |
| 133 | ggggcagcaa  | gatactagct  | tcaatgttcc  | aggcgatgac  | cagcattggc  | tgggagccag  | 6300 |
| 134 | cttatcccg   | gtgaagaaca  | tgatggctcg  | ggacaagaac  | catgcttcaa  | tcctaactcg  | 6360 |
| 135 | gtctttaggg  | aatgagtctt  | acgcggcgac  | tgtctttgcc  | caaagtggctg | attacgtccg  | 6420 |
| 136 | gaaggctgat  | ccgaccgggg  | ttcagcacta  | tgaaggggtg  | accacaacc   | ggaagtttga  | 6480 |
| 137 | cgacgccacc  | cagattgaaa  | gccggatgta  | tgctccggcc  | aaggtaattg  | aagaatactt  | 6540 |
| 138 | gaccaataaa  | ccagccaagc  | cattttatctc | agttgaatac  | gctcacgcca  | tgggcaactc  | 6600 |
| 139 | cgctcggtgac | ctggccgcct  | acacggccct  | ggaaaaatac  | ccccactacc  | agggcggtct  | 6660 |
| 140 | catctgggac  | tggattgacc  | aaggactgga  | aaaagacggg  | cacctgcttt  | atggggcgga  | 6720 |
| 141 | cttcgatgac  | cggccaaccg  | actatgaatt  | ctgcgggaac  | ggcctggtct  | ttgctgaccg  | 6780 |
| 142 | gactgaatcg  | ccgaaactgg  | ctaattgtcaa | ggccttttac  | gccaacctta  | agttagaagt  | 6840 |
| 143 | aaaagatggg  | cagctcttcc  | tcaaaaacga  | caatttattt  | accaacagct  | catcttacta  | 6900 |
| 144 | cttcttgact  | agtcttttgg  | tcgatggcaa  | gttgacctac  | cagagccggc  | ctctgacctt  | 6960 |
| 145 | tggcctggag  | cctggcgaat  | ccgggacctt  | tgcctgacct  | tggccggaag  | tcgctgatga  | 7020 |
| 146 | aaaaggggag  | gtcgtctacc  | gggtaacggc  | ccacttaaaa  | gaagacttgc  | cttgggcgga  | 7080 |
| 147 | tgagggcttc  | actgtggctg  | aagcagaaga  | agtagctcaa  | aagctgccgg  | aatttaagcc  | 7140 |
| 148 | gggaagggcg  | ccagatttag  | ttgattccga  | ctacaacctt  | ggcctgaaag  | gaaataactt  | 7200 |
| 149 | ccaaattctc  | ttctccaagg  | tcaagggtcg  | gcccgtttcc  | ctcaagtatg  | ccggtaggga  | 7260 |
| 150 | atacttgaag  | cggtgcggg   | aattttacct  | ctggcgggcc  | ctgacggaca  | acgaccgggg  | 7320 |
| 151 | agctgggttac | ggctatgac   | tggcccggtg  | ggaaaatgcc  | ggcaagtatg  | cccgttgaa   | 7380 |
| 152 | agacatcagc  | tgcgaggtca  | aggaagactc  | cgttttggtc  | aagactgcct  | ttacgttgcc  | 7440 |
| 153 | tgctcgctta  | aaggggtgatt | taaccgtgac  | ctatgaagtc  | gatggacggg  | gcaagattgc  | 7500 |

## RAW SEQUENCE LISTING

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:28

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw

|     |   |             |             |             |             |             |      |
|-----|---|-------------|-------------|-------------|-------------|-------------|------|
| 154 | tgtaacagct                              | gacttcccag  | gcgcggaaga  | agctgggtctc | ttgccagcct  | ttggcttgaa  | 7560 |
| 155 | cctggccctg                              | ccaaaagaac  | tgaccgatta  | ccgtactat   | ggctctgggac | ctaatagagag | 7620 |
| 156 | ctaccagac                               | cgcttggaag  | gtaattacct  | gggcatctac  | cagggagcgg  | taaaaaagaa  | 7680 |
| 157 | ctttagcca                               | tatcgccgc   | aggaaacggg  | caaccggagc  | aagggttcgct | ggtaccagct  | 7740 |
| 158 | ctttgatgaa                              | aagggcggct  | tggaatttac  | ggccaatggg  | gcagacttga  | acttgtctgc  | 7800 |
| 159 | tttgccatat                              | tctgccgccc  | aaattgaagc  | agcggaccac  | gcttttgaac  | tgactaacia  | 7860 |
| 160 | ttacacttgg                              | gttagagcct  | taagcgccca  | gatgggggtc  | ggcggggatg  | actcctgggg  | 7920 |
| 161 | gcagaaggtc                              | caccggaat   | tctgcctgga  | tgctcaaaaa  | gcccgccagc  | ttcgctgggt  | 7980 |
| 162 | gattcagccc                              | cttttactaa  | aataaatgct  | acaattgact  | taacaggatg  | aaattttagt  | 8040 |
| 163 | aaaagcaaag                              | cgagtgaaga  | agatggcaac  | gatcagagaa  | gtgccaaggc  | agccggcgtg  | 8100 |
| 164 | tcgctagcga                              | cggtc       |             |             |             |             | 8115 |
| 166 | <210> SEQ ID NO: 2                      |             |             |             |             |             |      |
| 167 | <211> LENGTH: 8115                      |             |             |             |             |             |      |
| 168 | <212> TYPE: DNA                         |             |             |             |             |             |      |
| 169 | <213> ORGANISM: Lactobacillus plantarum |             |             |             |             |             |      |
| 171 | <400> SEQUENCE: 2                       |             |             |             |             |             |      |
| 172 | gatgtacggg                              | ccagatatac  | gcgttgacat  | tgattattga  | ctagttatta  | atagtaatca  | 60   |
| 173 | attacggggg                              | cattagttca  | tagcccatat  | atggagttcc  | gcgttacata  | acttacggta  | 120  |
| 174 | aatggcccg                               | ctggctgacc  | gcccacgac   | ccccgcccat  | tgacgtcaat  | aatgacgtat  | 180  |
| 175 | gttcccatag                              | taacgccaat  | agggactttc  | cattgacgtc  | aatgggtgga  | ctatttacgg  | 240  |
| 176 | taaactgccc                              | acttggcagt  | acatcaagt   | tatcatatgc  | caagtacgcc  | ccctattgac  | 300  |
| 177 | gtcaatgacg                              | gtaaatggcc  | cgccctggcat | tatgccaggt  | acatgacctt  | atgggacttt  | 360  |
| 178 | cctacttggc                              | agtagacata  | cgtattagtc  | atcgctatta  | ccatgggtgat | gcggttttgg  | 420  |
| 179 | cagtacatca                              | atgggcgtgg  | atagcgggtt  | gactcacggg  | gatttccaag  | tctccacccc  | 480  |
| 180 | attgacgtca                              | atgggagttt  | gttttggcac  | caaaatcaac  | gggactttcc  | aaaatgtcgt  | 540  |
| 181 | aacaactccg                              | ccccattgac  | gcaaattggg  | ggtaggcgtg  | tacgggtgga  | ggtctatata  | 600  |
| 182 | agcagagctc                              | tctggctaac  | tagagaaccc  | actgcttact  | ggcttatcga  | aattaatacg  | 660  |
| 183 | actcactata                              | gggagaccca  | agcttgggtac | cgagctcgga  | tccactagta  | acggccgcca  | 720  |
| 184 | gtgtgctgga                              | attctgcaga  | tatccatcac  | actggcgccc  | gctcgagcat  | gcacttagag  | 780  |
| 185 | ggccctattc                              | tatagtgtca  | cctaaatgct  | agagctcgct  | gatcagcctc  | gactgtgcct  | 840  |
| 186 | tctagtgtcc                              | agccatctgt  | tgtttgcgcc  | tcccccggtc  | cttccttgac  | cctggaagggt | 900  |
| 187 | gccactccca                              | ctgtcctttc  | ctaataaaat  | gaggaaattg  | catcgcatgt  | tctgagtagg  | 960  |
| 188 | tgtcattcta                              | ttctgggggg  | tgggggtggg  | caggacagca  | agggggagga  | ttgggaagac  | 1020 |
| 189 | aatagcaggc                              | atgctgggga  | tgcgggtggg  | tctatggctt  | ctgaggcgga  | aagaaccagc  | 1080 |
| 190 | tgcattaatg                              | aatcggccaa  | cgcgcgggga  | gaggcggttt  | gcgtattggg  | cgctcttccg  | 1140 |
| 191 | cttcctcgct                              | cactgactcg  | ctgcgctcgg  | tcgttcggct  | gcggcgagcg  | gtatcagctc  | 1200 |
| 192 | actcaaaggc                              | ggtaatacgg  | ttatccacag  | aatcagggga  | taacgcagga  | aagaacatgt  | 1260 |
| 193 | gagcaaaaag                              | ccagcaaaaag | gccaggaacc  | gtaaaaaggc  | cgcgttgctg  | gcgtttttcc  | 1320 |
| 194 | ataggctccg                              | ccccctgac   | gagcatcaca  | aaaatcgacg  | ctcaagtcag  | aggtggcgaa  | 1380 |
| 195 | acccgacagg                              | actataaaga  | taccaggcgt  | ttccccctgg  | aagtcctctc  | gtgcgctctc  | 1440 |
| 196 | ctgttccgac                              | cctgccgctt  | accggatacc  | tgtccgcctt  | tctcccttcg  | ggaagcgtgg  | 1500 |
| 197 | cgctttctca                              | atgctcacgc  | tgtaggtatc  | tcagttcggt  | gtaggtcggt  | cgctccaagc  | 1560 |
| 198 | tgggtctgtg                              | gcacgaaccc  | cccgttcagc  | ccgaccgctg  | cgcttatccc  | ggtaactatc  | 1620 |
| 199 | gtcttagctc                              | caaccgggta  | agacacgact  | tatcgccact  | ggcagcagcc  | actggtaaca  | 1680 |
| 200 | ggattagcag                              | agcgagggtat | gtaggcggtg  | ctacagagtt  | cttgaagtgg  | tggcctaact  | 1740 |
| 201 | acggctacac                              | tagaaggaca  | gtatttggtg  | tctgcgctct  | gctgaagcca  | gttaccttcg  | 1800 |
| 202 | gaaaaagagt                              | tggtagctct  | tgatccggca  | aacaaaccac  | cgctggtagc  | ggtgggtttt  | 1860 |
| 203 | ttgtttgcaa                              | gcagcagatt  | acgcgcagaa  | aaaaaggatc  | tcaagaagat  | cctttgatct  | 1920 |
| 204 | tttctacggg                              | gtctgacgct  | cagtggaaacg | aaaactcacg  | ttaagggatt  | ttgggtcatga | 1980 |

## RAW SEQUENCE LISTING

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:28

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw

|     |             |             |             |             |             |             |      |
|-----|-------------|-------------|-------------|-------------|-------------|-------------|------|
| 205 | gcggtatacat | atgtgaatgt  | atgttagaaaa | ataaacaaat  | aggggttccg  | cgcacatttc  | 2040 |
| 206 | cccgaaaagt  | gccacctgac  | gtcgacggat  | cgggagatca  | tatcctgaca  | ttctctttac  | 2100 |
| 207 | caaataaaat  | aattttgttt  | attaaaaatcc | cattttgcca  | caacttcttc  | cgcagcttcc  | 2160 |
| 208 | atgtgtctct  | tgggtgaatc  | ttcatcgcca  | acatgaacta  | aatcaccatt  | ctcaacatct  | 2220 |
| 209 | tcaagtttca  | aatcttgctt  | aatttgcttt  | aataatccac  | catagctgat  | ttgtcgtggt  | 2280 |
| 210 | ccagctaagg  | catactccaa  | atttttaatc  | accaccaaat  | tacgctcatc  | atcagccgtc  | 2340 |
| 211 | atataatcag  | ctgattttac  | ctcgtatttc  | gccgtttctt  | cggcactagc  | ttgcaaagag  | 2400 |
| 212 | tcagttcctt  | tacgttttgt  | agctttaaca  | gcctgcacat  | gcaccacagg  | ctcataatca  | 2460 |
| 213 | actttcaagg  | ctttttgcca  | taattttgcc  | cattctgctt  | gtgctaaata  | attattttgaa | 2520 |
| 214 | ttcttaaaat  | aacttgattt  | tacaaacagc  | aacacatgca  | agtgttgatt  | atatgacccg  | 2580 |
| 215 | tcttggtcat  | taacggtaat  | ttcggttgaa  | cgtaaataac  | ccaataaatt  | tttagtcaat  | 2640 |
| 216 | tttttatagc  | gagttagctt  | attaaaggct  | ttagtcaaag  | ctcttaaaga  | cacttttaac  | 2700 |
| 217 | tcctctgctg  | aatgagcggt  | tttaacgggt  | aaagttaaaa  | acaaaaaccg  | tccttttaggc | 2760 |
| 218 | tctcttgcaa  | ctgcttcgcg  | aataatttgt  | tttaactggc  | tcgagttttt  | catgctcctt  | 2820 |
| 219 | ctccaattac  | acaatggaca  | caatcgttta  | tgacaaaacc  | acgtttgata  | aagttttaag  | 2880 |
| 220 | tgctcgccaa  | tcttacgaaa  | acgcaaaact  | tcaccacaac  | cccgtaacatc | atgtgcccgt  | 2940 |
| 221 | ttaaattcta  | agattgccaa  | atattcggca  | tagcgcacat  | tttcaatctt  | ccgttctcgc  | 3000 |
| 222 | caaggtctaa  | ctttgccatt  | ttcagtttta  | tcttcaaaaa  | tttctgacat  | aaaaagctcc  | 3060 |
| 223 | tccagtttat  | ccacgtgaag  | gagctgacta  | tctttttcaa  | taagcttata  | accttgacat  | 3120 |
| 224 | catagggtct  | ttcccttaga  | ataggctata  | aatcgcaaat  | gataatcaac  | tcacgtgttc  | 3180 |
| 225 | cgagcgccca  | aactaggaat  | ttgcacgtgg  | gtttttatct  | tgtctttctt  | tcaaccaatt  | 3240 |
| 226 | tataacccta  | ataatacacc  | aaaagcctat  | aaaatcaatg  | gatacaagcc  | caattaagcc  | 3300 |
| 227 | taatcaagct  | tgatttttaa  | aaactagttg  | ttgctaatag  | tatcaagata  | agaagaaaac  | 3360 |
| 228 | gccaaaaaatt | gcgtttttta  | accccaaaaa  | gcagatcagc  | aaaaaccgct  | gaactgcttt  | 3420 |
| 229 | ttttaaaccg  | tggttttcag  | ccacactgac  | cagctgaacc  | agctggaccg  | taacgcttgc  | 3480 |
| 230 | cgcgcgtggg  | ctcgggaaaa  | caagggtctg  | ttttccaaga  | cgtcaggctt  | ttggtattgt  | 3540 |
| 231 | ctagtctatc  | aactccttaa  | agcctccaag  | aggggctaatt | atcgcttgta  | aggtcgaata  | 3600 |
| 232 | agccctctca  | agtcgattta  | ccgttgacag  | acagtttagat | agctaaactgt | tagctaaaat  | 3660 |
| 233 | cgtctagaac  | gcaataaaga  | gcctttaaaa  | ttaacgttca  | aaaataaaaa  | agttcgaagg  | 3720 |
| 234 | agctagcgac  | tgaacttatt  | tatttttgaa  | tgttccaaac  | tgacgcaagt  | cagttacggt  | 3780 |
| 235 | tgagcaacgc  | gaaatctgat  | gcaggttttg  | atgggttttag | cacaacacaa  | cttcatggtg  | 3840 |
| 236 | tgtgtaagtg  | cgcactacat  | gataatgcgc  | actacatgat  | aatgcgcact  | acatgataat  | 3900 |
| 237 | gtgcgcacta  | catgataatg  | cgcactacat  | gataatgtac  | atgataatgt  | gcgcactaca  | 3960 |
| 238 | tgataatgcg  | cactacatga  | taatgcgcac  | tacatgataa  | tgcgactac   | atgataatgc  | 4020 |
| 239 | gcactacatg  | ataatgcgca  | ctacatgata  | atgcgcacta  | catgataatg  | tgcacttaca  | 4080 |
| 240 | ctccaaataa  | attggagtaa  | tgctaaaacc  | tgtatcagaa  | gtcagcaagc  | tgacaacaaa  | 4140 |
| 241 | aaagggatat  | gccaacggat  | ttaccgttga  | tctcccgatc  | ccctatggtc  | gactctcagt  | 4200 |
| 242 | acaatctgct  | ctgatgccgc  | atagttaagc  | cagtatctgc  | tccctgcttg  | tgtgttgagg  | 4260 |
| 243 | gtcgtctgag  | agtgcgcgag  | caaaatttaa  | gtacaacaa   | ggcaaggctt  | gaccgacaat  | 4320 |
| 244 | tgcatgaaga  | atctgcttag  | ggttaggcgt  | tttgcgctgc  | ttcggttagaa | gcaaactaag  | 4380 |
| 245 | agtgtgttga  | gtagtgcagt  | atcttaaaat  | tttgtataat  | aggaattgaa  | gttaaattag  | 4440 |
| 246 | atgctaaaaa  | tttgtaatta  | agaaggagtg  | attacatgat  | tggcagccag  | tctccgggca  | 4500 |
| 247 | attaatgaac  | ttggacatgg  | ttgacgacc   | ggcttttgca  | agccgaattc  | gaccacactg  | 4560 |
| 248 | gcggcgctta  | ctagggtatc  | gatccgataa  | aaagttaggc  | gacggctttg  | ccctgggtgcc | 4620 |
| 249 | agcagacggg  | aagggtctacg | cgccatttgc  | cggctactgtc | cgccagctgg  | ccaagaccgc  | 4680 |
| 250 | gcaactcgatc | gtcctggaaa  | atgaacatgg  | ggtcttggtc  | ttgattcacc  | ttggcctggg  | 4740 |
| 251 | cacgggtcaaa | ttaaacggga  | ctggctttgt  | cagctatggt  | gaagagggca  | gccaggtaga  | 4800 |
| 252 | agccggccag  | cagatcctgg  | aattctggga  | cccggcgatc  | aagcaggcca  | agctggacga  | 4860 |
| 253 | cacggtaatc  | gtgaccgtca  | tcaacagcga  | aactttcaca  | aatagccaga  | tgctcttgcc  | 4920 |

**VERIFICATION SUMMARY**

DATE: 09/29/2004

PATENT APPLICATION: US/09/778,516B

TIME: 11:34:29

Input Set : A:\12875-002001.txt

Output Set: N:\CRF4\09292004\I778516B.raw